SUPPLEMENT TO THE ENVIRONMENTAL ASSESSMENT:
REDUCING BIRD DAMAGE IN THE STATE OF NEW JERSEY

United States Department of Agriculture
Animal and Plant Health Inspection Service
Wildlife Services

In cooperation with the
United States Fish and Wildlife Service
and the
New Jersey Division of Fish and Wildlife

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INTRODUCTION

An environmental assessment (EA) was prepared by the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS) program to analyze the potential impacts to the quality of the human environment from resolving or alleviating damage to agriculture, property, natural resources and threats to human health and safety caused by birds in the state of New Jersey (USDA, 2014). The EA evaluated the need for bird damage management and assessed potential impacts on the human environment of three alternatives to address that need. WS' proposed action in the EA implements an integrated damage management program to fully address the need to manage bird damage and threats while minimizing impacts to the human environment. The EA analyzed the effects of WS' activities to reduce damage and threats associated with resident and migratory bird species.

PURPOSE

The purpose of the 2014 EA will remain as addressed in section 1.2 of the EA. This supplement examines potential environmental impacts of WS' program as it relates to an increase in the number of requests, both actual and potential, for assistance to manage bird damage and threats from double-crested cormorants (*Phalacrocorax auritus*), ospreys (*Pandion haliaetus*), American kestrels (*Falco sparverius*), Cooper's hawks (*Accipiter cooperii*), sharp-shinned hawks (*Accipiter striatus*), great horned owls (*Bubo virginianus*), mute swans (*Cygnus olor*), and wild turkeys (*Meleagris gallopavo)* since the issuance of the Decision and FONSI in 2014. This supplement will evaluate the potential environmental effects from an increase in management techniques to the above mentioned target species.

NEED FOR ACTION

A description of the need for action to reduce damage to resources and threats to human health and safety caused by birds in the state of New Jersey is listed in Section 1.3 of the EA. The need for action addressed in the EA remains applicable to supplement; however, WS has received increased requests for assistance and/or has experienced increased numbers of ospreys, American kestrels, Cooper's hawks, sharp-shinned hawks, great horned owls, wild turkeys, mute swans, and double-crested cormorants causing damage and threats of damage since the completion of the EA.

The need for action is based on a need to manage bird damage to agricultural resources, natural resources, and property, including threats to human safety associated with birds. Some species of wildlife have adapted to and have thrived in human altered habitats. Birds, including double-crested cormorants,

ospreys, American kestrels, Cooper's hawks, sharp-shinned hawks, great horned owls, mute swans, and wild turkeys often come into conflicts with people, natural resources and agriculture.

This proposed EA supplement addresses the need for an increase in bird damage management activities throughout New Jersey. Those conflicts often lead people to request assistance with reducing damage to resources and to reduce threats to human safety. The need for action to manage damage and threats associated with birds arises from requests for assistance received by WS to reduce and prevent damage from occurring to four major categories: agricultural resources, property, natural resources, and threats to human safety. The number of technical assistance projects involving bird damage or threats of bird damage to those four major resource types for double-crested cormorants, ospreys, American kestrels, Cooper's hawks, sharp-shinned hawks, great horned owls, mute swans, and wild turkeys from fiscal year (FY) 2014 through FY 2019 is shown in Table 1.

Table 1 – Technical assistance projects conducted by WS in New Jersey, FY 2014 – FY 2019

Species	FY 2014	FY 2015	FY 2016	FY 2017	FY2018	FY2019	Average
Double-crested cormorant	3	4	3	3	4	6	**3.8**
Osprey	9	27	9	6	16	19	**14.3**
American kestrel	1	2	1	4	4	2	**2.3**
Cooper's hawk	0	0	0	1	1	3	**0.8**
Sharp-shinned hawk	0	0	0	0	0	0	**0**
Great horned owl	0	3	3	1	1	3	**1.8**
Mute swan	4	2	0	3	13	16	**6.3**
Wild turkey	13	1	2	2	23	92	**22.2**

Double crested cormorants

On May 25, 2016, the United States District Court for the District of Columbia vacated the Public Resource Depredation Order for double-crested cormorants. The Court's vacatur of the Public Resource Depredation Order (PRDO) followed the Court's decision on the merits on March 29, 2016, concluding that the 2014 EA prepared by USFWS in renewing the PRDO was insufficient. Specifically, the Court found that USFWS failed to take a "hard look" at the effect of the PRDO on double-crested cormorant populations when it did not update previous population model estimates in its 2014 EA (see *Public Employees for Environmental Responsibility v. USFWS*, 177 F. Supp. 3d 146, 153 (D.D.C. 2016)).

Following the Court's decisions, all activities that result in take of double-crested cormorants for the protection of aquaculture or public resources now require a depredation permit issued by USFWS pursuant to the Migratory Bird Treaty Act (MBTA) (16 USC 703-712). WS previously received a state-wide depredation permit from USFWS for the take of various species of birds. WS currently operates under a state-wide depredation permit from USFWS for the take of various migratory bird species, including double-crested cormorants.

WS-New Jersey has determined that to the extent that its EA references the USFWS' vacated the 2009 EA and/or the 2003 Environmental Impact Statement, WS-New Jersey will no longer rely on the analyses from those documents regarding the impacts on double-crested cormorant populations.

The USFWS recently completed an EA on the take of cormorants nationwide across 37 central and eastern States and the District of Columbia pursuant to 50 C.F.R. § 21.41. This EA (USFWS, 2017b) evaluated the reasonably foreseeable environmental impacts of making decisions on cormorant depredation permit applications for certain activities; managing cormorants at or near aquaculture

facilities; alleviating human health and safety concerns; protecting threatened and endangered species (as listed under the Endangered Species Act of 1973, as amended; ESA); reducing damage to property; and protecting species of high conservation concern, and rare and declining plant communities at a local scale. The EA considered the impact to nontarget species and the effect to the environment from using lead shot for the take of cormorants. Based on the analysis in this EA (USFWS, 2017a), a Decision and a Finding of No Significant Impact (FONSI) was signed by USFWS selecting the reduced take alternative.

The need for action with double-crested cormorants pertains to damage to public resources, threatened and endangered (T&E) species, natural resources and property. From FY 2014 to FY 2019, WS responded to 22 requests for assistance regarding issues involving double-crested cormorants. During that time, WS saw an increase in the number of complaints of double-crested cormorants especially with regards to their nesting and roosting activities. In FY 2019, WS responded to four requests for assistance for nesting cormorants on navigational aids in the Delaware Bay. Nests impeded with navigation on the waterway, and temporary navigational aids had to be installed until cormorant nests could be removed after their nesting season.

Beginning in FY 2016, WS has also been requested to assist New Jersey Division of Fish and Wildlife (NJDFW) Endangered and Non-game Species Program (ENSP) in reducing competition for nesting sites between double-crested cormorants and colonial nesting waterbirds on Gull Island which is part of the Cape May Coastal Wetlands Wildlife Management Area in Cape May County, New Jersey. Gull Island is an important nesting location for a variety of sensitive waterbird species such as great egret (*Ardea alba*), snowy egret (*Egretta thula*), glossy ibis (*Plegadis falcinellus*), black-crowned night-heron (Nycticorax nycticorax), little blue heron (*Egretta caerulea*), tricolored heron (*Egretta tricolor*), great black-backed gull (*Larus marinus*), herring gull (*Larus argentatus*), and American oystercatchers (*Haematopus palliates*). The NJDFW currently lists the breeding population of black-crowned night-herons as "threatened" and the breeding population of American oystercatchers as a "species of concern." The number of cormorant nests on Gull Island has increased annually and a new sub-colony emerged in an area of the island that is traditionally used by nesting waterbirds (NJDEP, 2018). Since FY 2016, WS works in cooperation with NJDFW-ENSP to reduce competition for nesting sites between double-crested cormorants and colonial nesting waterbirds through egg addling and removal of cormorant nests. In FY 2016 and FY 2017, WS reached the permit limit of 20 nests despite continued presence of nesting cormorants. In FY 2018 and FY 2019, WS' permit limit was 70 nests. However, more nests were observed even after the permit limit was reached. 105 nests in FY 2018 and 143 nests in FY 2019 were observed on Gull Island between the two sub-colonies.

Cormorants can negatively affect colonial waterbird species through habitat degradation and nest site competition (Farquhar, McCullough, & Mazzochi, 2003). Cormorants defoliate shrubs and trees used for nesting and roosting which displaces waterbird species such as herons and egrets (Farquhar et al., 2003; Lemmon, Burgbee, & Stephens, 1994; Shieldcastle & Martin, 1999). Once they have destroyed all available trees for nesting, cormorants will often shift to ground nesting (Hebert, Duffe, Weseloh, Senese, & Haffner, 2005). While cormorants easily adapt to ground nesting, other colonial waterbirds (i.e., herons and egrets) prefer to nest higher in the trees to avoid predation (Cuthbert, Wires, & McKearnan, 2002; Post, 1990). However, it has also been shown that cormorant management activities themselves can have negative and/or positive impacts on species that co-habituate with cormorants (Wyman, Wires, & Cuthbert, 2018).

The presence of suitable trees and shrubs is vital for many nesting colonial waterbirds. Wires and Cuthbert (2001) identified vegetation die off as an important threat to 66% of the colonial waterbird sites designated as 'conservation sites of priority' in the Great Lakes of the United States. Cormorants were present at 23 of the 29 priority conservation sites reporting vegetation die off (Wires & Cuthbert, 2001). Cormorants were reported to impact the herbaceous layers and trees used for nesting due to fecal

deposition, and often the herbaceous layer was reduced or eliminated from the colony site (Wires, Cuthbert, Trexel, & Joshi, 2001). In addition, natural resource managers reported that the impacts to avian species from cormorants were primarily from habitat degradation and from competition for nest sites (Wires et al., 2001). Although loss of vegetation can have an adverse impact on many species, some colonial waterbirds such as pelicans, gulls and terns do prefer sparsely vegetated substrates.

Wild Turkeys

WS has proposed adding chemical immobilization with ketamine-xylazine for wild turkeys as a capture method for aggressive turkeys in urban areas. The combination of ketamine-xylazine has been used for a number of avian species in wildlife management (Gandomani, 2009; Teare, 1987). The use of chemical immobilization will be overseen by a consulting veterinarian who will be consulted on the appropriate dosage for wild turkeys. Under a Cooperative Service Agreement (CSA) between WS and NJDFW, WS addresses technical assistance calls and direct operational activities for state-regulated wildlife species such as wild turkeys and mammals. Prior to this CSA, requests for assistance of wild turkeys were primarily deferred to NJDFW.

As evident in Table 1, requests for assistance received by WS to alleviate damage associated with wild turkeys has drastically increased since the initiation of the CSA. Most of the requests for assistance are with regards to human health and safety threats. In FY 2019, WS responded to 62 requests for technical assistance for wild turkeys with regards to human health and safety threats. Wild turkeys that adapt to urban or suburban communities can be aggressive toward people especially during the nesting season. In these residential communities, wild turkeys can also cause damage to property by attacking reflections in glass or sides of vehicles, digging up flower beds, and damaging roofing materials from roosting.

Mute Swans

WS has proposed adding chemical immobilization with ketamine-xylazine for mute swans as a capture method for aggressive swans in urban areas. The combination of ketamine-xylazine has been used for a number of avian species in wildlife management (Gandomani, 2009; Teare, 1987). The use of chemical immobilization will be overseen by a consulting veterinarian who will be consulted on the appropriate dosage for mute swans. Under a CSA between WS and NJDFW, WS addresses technical assistance calls and direct operational activities for wildlife species afforded state protection such as mute swans as well as state-regulated wildlife species such as mammals. As evident in Table 1, requests for assistance received by WS to alleviate damage associated with mute swans has increased from five requests in FY 2015 to FY 2017 to 30 requests from FY 2018 to FY 2019. Majority of these requests for assistance are with regards to human health and safety threats.

Mute swans aggressively defend their nests, nesting areas, and young, and may attack or threaten pets, children, and adults (Conover & Kania, 1994). Birds which have learned to expect food from people may become aggressive in seeking food. Mute swans are also very territorial and will defend their nest site and cygnets from all perceived threats including people. Most of the aggressive behavior is bluffing, but mute swans are capable of inflicting bruises, sprains, bone fractures, and in at least two cases on the East Coast, human fatalities (Wisconsin Department of Natural Resources, 2007). Presence of aggressive swans can prevent people from using and enjoying their own property, public parks, and other areas due to safety concerns. Mute swans can also have negative effects on the environment by consuming large quantities of submerged aquatic vegetation that are essential to native fish and wildlife species. Fenwick (1983) found that female mute swans in Chesapeake Bay consumed an average of 43% of their body weight daily while male mute swans could consume an average of 35% of their body weight daily. Thus, large concentrations of mute swans can also have devastating effects on submerged aquatic vegetation beds essential to many fish, wildlife, and invertebrate species.

Ospreys

WS has proposed increased annual removal and destruction of osprey nests as well as relocation of osprey nests as a result of increased requests for assistance. Ospreys nest on a wide variety of natural and artificial sites (Poole, 1989). Natural sites include trees (live or dead), cliffs, and boulders (Poole, 1989). However, they are quick to take advantage of artificial nesting sites including duck hunting blinds, channel markers, towers for radio, cell phone, and utility lines; and man-made nesting platforms (Grace & Wurst, 2010; Poole, Bierregaard, & Martell, 2002). Osprey nests are often constructed of large sticks, twigs, and other materials. Debris from osprey nests on artificial structures such as utility poles often come into contact with high voltage transformers and wires that could disrupt utility services, impede maintenance, and even cause fires. In FY 2016, an osprey nest on a power pole caught fire at a naval station in New Jersey and had to be removed. A second osprey nest at the same naval station was removed because it was also at risk of catching fire and endangering the safety of the birds. For most conflicts in New Jersey, osprey nests inhibit access to utility structures for maintenance by creating obstacles to workers. The loss of power to facilities can also pose a threat to human safety and prevents facilities from fulfilling mission critical operations such as emergency response communications. A survey of nesting ospreys in New Jersey found that 75% of nesting ospreys use single-post platforms erected for nesting while 8% of osprey nests occurred on cell towers, 4% occurred on channel markers, 3% nested on duck blinds, 2% occurred on dead trees, and 7% nested on other structures (Grace & Wurst, 2010). Ospreys nesting near airports can also pose risks of aircraft striking an osprey causing damage to aircraft and threatening aviation safety. Since 1990, there have been 20 strikes reported to the Federal Aviation Administration (FAA) involving an aircraft striking ospreys at civil airports in New Jersey (FAA, 2019). The breeding population of ospreys are listed as "threatened" by NJDFW based on the status of the breeding population in New Jersey.

American Kestrels

WS has increased live-capture and translocation of American kestrels as a result of increased direct control requests for managing American kestrels on civil and military airports in New Jersey. The presence of American kestrels in the vicinity of airports and military installations is a concern due to the threat of an aircraft striking them. Aircraft striking wildlife can cause damage to aircraft and threatens the safety of passengers. In the United States between 1990 and 2018, there have been 6,155 reported civil aircraft strikes involving American kestrels (Dolbeer, Begier, Miller, Weller, & Anderson, 2019). American kestrels have been observed at times roosting and hunting in or around airport facilities and runways. WS has employed harassment techniques to disperse American kestrels from airports and military installations, but the raptors appear to have habituated to nonlethal harassment methods and often do not leave the area. Since FY 2015, there have been 157 strikes reported to the FAA involving an American kestrel at civil airports in the State (FAA, 2019).

Great Horned Owls

WS has proposed increased live capture and translocation of great horned owls and adding lethal removal as a result of increased direct control requests for great horned owls on civil and military airports as well as on properties managed by cooperating partners. In the United States between 1990 and 2018, there have been 299 civil aircraft strikes involving great horned owls causing nearly $2,802,000 in damages (Dolbeer et al., 2019). Great horned owls are large-bodied birds that can cause substantial damage to aircraft. They are also nonmigratory; so they present a risk to safe aircraft operations throughout the year. Great horned owls generally hunt in open areas (Houston, Jones, & Pletz, 1998) such as airfields because they provide optimal grassland habitat for many small rodents. In addition, airfield structures provide hunting perches and nesting sites that bring owls in close proximity to runways.

Impacts on the productivity and survivorship of rare or threatened wildlife can be severe when they become targets of great horned owls. Great horned owls are opportunistic, but they can concentrate hunting efforts on specific waterbird or shorebird nesting colonies (Artuso, Houston, Smith, & Rohner, 2013). In a study carried out in 1991 and 1992 on the Missouri River, great horned owls were responsible for 68% of documented mortality of piping plover (*Charadrius melodus*) and least tern (*Sternula antillarum*) chicks (Kruse, Higgins, & Lee, 2001). Predation events remained substantial in subsequent years until trapping and removal of great horned owls on the Missouri River led to increased survival of very young piping plover chicks (Catlin, Fraser, Felio, & Cohen, 2011). In New Jersey, piping plovers and least terns are listed as "endangered." Because great horned owls are known predators of young shorebirds along the New Jersey coastline, WS anticipates increased requests for assistance in managing great horned owls to reduce possible predation events.

New Target Species

Although WS has not received any requests for assistance to alleviate damage caused by sharp-shinned hawks and only a few requests for assistance for Cooper's hawks, WS has decided to include an analysis of these hawk species because WS has observed and received reports of greater numbers of Cooper's hawks and sharp-shinned hawks on New Jersey airfields and surrounding environments. The 2014 EA described the general hazards and threats that birds cause to aviation safety and operations. Since then, Cooper's hawks and sharp-shinned hawks have been more often observed crossing runways and taxiways and perching on airport-related structures. These observations are the primary purpose for the expanded analysis of WS capturing and translocating more Cooper's hawks and sharp-shinned hawks during airport projects. WS has also proposed adding removal and destruction of Cooper's hawk and sharp-shinned hawk nests in anticipation that WS will continue to receive more requests to reduce threats to aircraft safety from civil airports and military installations in New Jersey.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) AND WS DECISION-MAKING:

All federal actions are subject to the NEPA (Public Law 9-190, 42 USC 4321 et seq.). WS follows CEQ regulations implementing the NEPA (40 CFR 1500 et seq.). In addition, WS follows the USDA (7 CFR 1b), and APHIS Implementing Guidelines (7 CFR 372) as part of the decision-making process. Those laws, regulations, and guidelines generally outline five broad types of activities to be accomplished as part of any project: public involvement, analysis, documentation, implementation, and monitoring. The NEPA also sets forth the requirement that all major federal actions be evaluated in terms of their potential to significantly affect the quality of the human environment for the purpose of avoiding or, where possible, mitigating and minimizing adverse impacts. Federal activities affecting the physical and biological environment are regulated in part by the CEQ through regulations in 40 CFR 1500-1508. In accordance with the CEQ and USDA regulations, APHIS guidelines concerning the implementation of the NEPA, as published in the Federal Register (44 CFR 50381-50384) provide guidance to WS regarding the NEPA process.

Pursuant to the NEPA and the CEQ regulations, this EA supplement documents the analyses of potential federal actions, informs decision-makers and the public of reasonable alternatives capable of avoiding or minimizing significant effects, and serves as a decision-aiding mechanism to ensure that the policies and goals of the NEPA are infused into federal agency actions. This EA supplement was prepared by integrating as many of the natural and social sciences as warranted, based on the potential effects of the alternatives. The direct, indirect, and cumulative impacts of the proposed action are analyzed.

DECISIONS TO BE MADE

Based on the scope of the EA and this supplement, the decisions to be made are: 1) How can WS best respond to the need to reduce bird damage in New Jersey; 2) Do the alternatives have significant cumulative impacts meriting an Environmental Impact Statement (EIS)?

SCOPE OF ANALYSIS

This supplement evaluates double-crested cormorant, osprey, American kestrel, Cooper's hawk, sharp-shinned hawk, great horned owl, mute swan, and wild turkey damage management to eliminate or alleviate damage and threats to agriculture, property, natural resources, and human health and safety. Unless otherwise discussed in this supplement, the scope of analysis remains valid as addressed in section 1.5 of the EA.

Federal, State, County, City, and Private Lands

Under two of the alternatives analyzed in detail, WS could continue to provide assistance on federal, state, county, municipal, and private land when a request was received for such services from the appropriate resource owner or manager. Actions taken on federal lands have been analyzed in the scope of this EA and supplement.

AUTHORITY AND COMPLIANCE

WS' activities to reduce damage and threats associated with wildlife are regulated by federal, state, and local laws and regulations. The primary statutory authorities for the WS program are the Act of March 2, 1931 (46 Stat. 1468; 7 USCA 8351; 7 USCA 8352) as amended, and the Act of December 22, 1987 (101 Stat. 1329-331, 7 USCA 8353). The WS program is the lead federal authority in managing damage to agricultural resources, natural resources, property, and threats to human safety associated with wildlife. WS' directives define program objectives and guide WS' activities managing animal damage and threats.

RELATIONSHIP OF THIS DOCUMENT TO OTHER ENVIRONMENTAL DOCUMENTS

WS' Environmental Assessments - *Environmental Assessment- Reducing Bird Damage in the state of New Jersey* (USDA, 2014): WS had previously developed an EA that analyzed the need for action to manage damage associated with resident and migratory bird species within New Jersey. The EA identified issues associated with bird damage management and analyzed alternatives to address those issues. After review of the analyses in the EA, a FONSI was signed on May 27, 2014, selecting the proposed action to implement an integrated approach to managing bird damage.

Changes in the need for action and the affected environment have prompted WS to initiate this new analysis for double-crested cormorants, ospreys, American kestrels, Cooper's hawks, sharp-shinned hawks, great horned owls, mute swans, and wild turkeys into this supplement. This supplement will address more recently identified changes and will assess the potential environmental impacts of program alternatives based on a new need for action. Since activities conducted under the previous EA related to double-crested cormorants, ospreys, American kestrels, Cooper's hawks, sharp-shinned hawks, great horned owls, mute swans, and wild turkeys will be re-evaluated under this supplement to address the new need for action and the associated affected environment, the previous analysis within the EA that addressed these species will be superseded by this analysis and the outcome of the Decision issued based on the analyses in this supplement.

RELATIONSHIPS OF AGENCIES DURING PREPARATION OF THIS EA SUPPLEMENT

Based on agency relationships, Memorandums of Understanding (MOUs), and legislative authorities, WS was the lead agency during the development of the EA and the supplement to the EA, and therefore, was responsible for the scope, content, and decisions made.

Public Involvement

Issues and alternatives related to bird damage management conducted by WS in New Jersey were initially developed by WS. Issues were defined and preliminary alternatives were identified through the scoping process. Notice of the proposed action and invitation for public involvement on the pre-decisional EA was placed in the Times Argus newspaper with statewide circulation. There was a 30-day comment period for the public to provide input on the pre-decisional EA. No comments were received from the public after review of the pre-decisional EA. A Decision and FONSI was signed for the EA on May 27, 2014.

This supplement, along with the EA, and the associated Decisions and FONSI will be made available for public review and comment through the publication of a legal notice announcing a minimum of a 30-day comment period. The legal notice will be published at a minimum in the Times Argus, sent to interested parties via the APHIS stakeholder registry, and posted on the APHIS website. Comments received during the public involvement process will be fully considered for new substantive issues and alternatives.

ISSUES ADDRESSED IN DETAIL

The issues analyzed in detail are discussed in Chapter 2 of the EA. Alternatives developed and identified during the development of the EA to address those issues are discussed in Chapter 3 of the EA. The following issues were identified during the scoping process for the EA:

- Effects of Damage Management Activities on Target Bird Populations
- Effects on Nontarget Wildlife Species Populations, Including T&E Species
- Effects of Damage Management Methods on Human Health and Safety
- Effects on the Aesthetic Values of Birds

Based on those damage management activities conducted previously by WS since the Decision and FONSI were signed in 2014, no additional issues have been identified that require detailed analyses. Those issues identified during the development of the EA remain applicable and appropriate to resolving damage and threats of damage associated with birds, including double-crested cormorants, ospreys, American kestrels, Cooper's hawks, sharp-shinned hawks, great horned owls, mute swans, and wild turkeys.

ALTERNATIVES INCLUDING THE PROPOSED ACTION

The alternatives considered and evaluated using the identified issues are described and discussed in detail in Chapter 3 of the EA. In addition, Chapter 4 of the EA analyzes the environmental consequences of each alternative as those alternatives relate to the issues identified. Appendix B of the EA provides a description of the methods that could be used or recommended by WS under each of the alternatives. The EA describes three potential alternatives that were developed to address the issues identified above. Alternatives analyzed in detail include:

- Alternative 1 - Continuing the Current Integrated Approach to Managing Bird Damage (Proposed Action/No Action)

- Alternative 2 - Bird Damage Management by WS using only Nonlethal Methods
- Alternative 3 - No Bird Damage Management Conducted by WS

STANDARD OPERATING PROCEDURES FOR BIRD DAMAGE MANAGEMENT TECHNIQUES

SOPs improve the safety, selectivity, and efficacy of wildlife damage management activities. The WS program uses many such SOPs which are discussed in detail in Chapter 3 of the EA. Those SOPs would be incorporated into activities conducted by WS when addressing bird damage management.

ENVIRONMENTAL CONSEQUENCES FOR ISSUES ANALYZED IN DETAIL

Potential impacts of Alternative 2 and Alternative 3 on the human environment related to the major issues have not changed from those described and analyzed in the EA and thus do not require additional analyses in this supplement. Chapter 4 of the EA contains a detailed discussion and comparison of the identified alternatives and the major issues. The issues were identified as important to the scope of the analysis in the EA (40 CFR 1508.25). Alternative 1 (proposed action/no action), as described in the EA, addresses requests for bird damage management using an integrated damage management approach by WS. The following is an analysis of potential impacts for each of the major issues analyzed in the EA since the completion of the EA as related to Alternative 1 (proposed action/no action alternative):

Issue 1 – Effects of Damage Management Activities on Target Bird Populations

A common concern when addressing damage associated with bird species are the effects on the populations of those species from methods used to manage damage. The integrated approach of managing damage associated with wildlife described in the EA under the proposed action alternative uses both nonlethal and lethal methods to resolve requests for assistance. Although nonlethal methods can disperse wildlife from areas where application occurs, wildlife is generally unharmed. Therefore, adverse effects are not often associated with the use of nonlethal methods. However, methods used to lethally remove birds and active nests can result in local reductions in those species' populations in the area where damage or threats of damage were occurring.

Magnitude can be described as a measure of the number of animals killed or nests destroyed in relation to their abundance. Magnitude may be determined either quantitatively or qualitatively. Quantitative determinations are based on population estimates, allowable harvest levels, and actual harvest data. Qualitative determinations are based on population trends and harvest data when available. Generally, WS only conducts damage management on species whose population densities are high. WS' take is monitored by comparing numbers of animals killed with overall populations or trends in populations to assure the magnitude of take is maintained below the level that would cause significant adverse impacts to the viability of native species populations. All lethal removal of birds and active nests by WS occurs at the requests of a cooperator seeking assistance and only after the appropriate permit has been issued by the USFWS, when appropriate.

The issue of the effects on target bird species arises from the use of nonlethal and lethal methods identified in the EA to address the need for reducing damage and threats associated with those bird species addressed in the EA. The EA found that when WS' activities are conducted within the scope analyzed in the EA, those activities would not adversely impact bird populations. WS' SOPs are designed to reduce the effects on bird populations and are discussed in section 3.3 and 3.4 of the EA.

WS has provided direct damage management and technical assistance in response to requests for assistance in New Jersey since the completion of the EA. Descriptions and application of direct damage

management and technical assistance projects are discussed in detail in Chapter 3 of the EA. All bird damage management activities conducted by WS were pursuant to applicable federal, state, and local laws and regulations.

Information on bird populations and trends are often derived from several sources including the Breeding Bird Survey (BBS), the Christmas Bird Count (CBC), the Partners in Flight Landbird Population database, published literature, unpublished reports, and harvest data. These methods remain applicable as described in the 2014 EA. Unless noted otherwise, the state population estimate listed for each species analyzed below was obtained from Partners in Flight Science Committee (PFSC) (2019). BBS population trends from 1966 to 2015 for New Jersey and the Bird Conservation Region (BCR) that the state falls within three bird conservation regions: the Appalachian Mountains (BCR 28), the Piedmont (BCR 29), and the New England/Mid-Atlantic Coast (BCR 30). The majority of the state lies within the New England/Mid-Atlantic Coast region. The statistical significance of a trend for a given species that is determined by the BBS data is color coded: a black percentage indicates a statistically non-significant positive or negative trend, a red percentage indicates a statistically significant negative trend, and a blue percentage indicates a statistically significant positive trend (Sauer et al., 2017).

Population Impact Analysis from WS' activities in New Jersey from FY 2014 through FY 2019

WS has provided direct damage management and technical assistance in response to requests for assistance with bird damage and threats since the completion of the EA and the Decision/FONSI signed in 2014. All bird damage management activities conducted by WS were pursuant to relevant federal, state, and local laws and regulations, and were conducted within the parameters analyzed in the EA. Direct operational assistance provided by WS included both nonlethal harassment techniques and the lethal removal of target bird species.

Since the competition of the EA and the Decision/FONSI, the PRDO has been vacated. The analyses in the EA relied upon a previous analysis conducted by the USFWS that evaluated the cumulative effects associated with the take of cormorants pursuant to the vacated depredation orders and under depredation permits. In the decision to vacate the depredation orders, the Court concluded the analysis of cumulative impacts on the cormorant population conducted in the NEPA analysis prepared by the USFWS was insufficient. Therefore, double-crested cormorants are being analyzed in the supplement.

Double-crested Cormorant Biology and Population Impacts

BBS Appalachian Mountains, 1966-2015: 9.17%
BBS Appalachian Mountains, 2005-2015: 11.50%
BBS New England/Mid Atlantic Coast, 1966-2015: 9.91%
BBS New England/Mid Atlantic Coast, 2005-2015: 17.14%
BBS Piedmont, 1966-2015: 6.48%
BBS Piedmont, 2005-2015: 8.50%
BBS NJ, 1966-2015: 4.64%
BBS NJ, 2005-2015: 8.31%
WS proposed removal: 200
WS proposed removal: 300 nests and all eggs

Double-crested cormorants are large fish-eating colonial waterbirds widely distributed across North America (Dorr & Flelder, 2017). Since the late 1970s, the double-crested cormorant population has increased in many regions of North America (Wires et al., 2001). Jackson and Jackson (1995) and Wires et al. (2001) suggested that the current cormorant resurgence may be, at least in part, a population recovery following years of dichlorodiphenyltrichloroethane (DDT)-induced reproductive suppression and unregulated take prior to protection under the MBTA.

Double-crested cormorants are one of six species of cormorants breeding in North America and have the widest range (Hatch & Weseloh, 1999). The population (breeding and non-breeding birds) in the United

States was estimated to be greater than one million birds in the 1990's (Tyson, Belant, Cuthbert, & Wesseloh, 1999). Double-crested cormorants are showing statistically significant increasing trends across the United States estimated at 3.9% annually since 1966 through 2015, and in the BBS New England/Mid-Atlantic region estimated at 17.14% annually since 2005 through 2015 (Sauer et al. 2017). Cormorants are most commonly found in New Jersey during the spring, summer, and fall months when the breeding and migrating populations are present, with peak migration numbers occurring in April and October (Wires et al. 2001). Breeding populations of cormorants occur along the coast with breeding habitat that includes lakes, rivers, swamps, and seacoasts where nesting can occur on the ground, in trees, and on coastal cliffs (Kushlan, 2002). The number of cormorants observed in the state along routes surveyed during the BBS has shown an increasing trend estimated at 8.31% annually since 2005 through 2015. Since 1966, the number of cormorants observed during the CBC has also shown a general increasing trend in New Jersey (NAS, 2010).

Double-crested cormorants are protected under the MBTA. However, take can occur pursuant to the MBTA through depredation permits issued by the USFWS. Take of double-crested cormorants in New Jersey will occur under the USFWS permits issued to WS by the USFWS. Double-crested cormorant nests can also be destroyed under a USFWS issued depredation permits to prevent and alleviate damage.

The number of double-crested cormorants addressed in New Jersey by WS to alleviate damage or threats is shown in Table 2. From FY 2014 through FY 2019, WS has lethally removed five cormorants and dispersed 18 cormorants in New Jersey to alleviate damage or threats. Lethal removal of cormorants in New Jersey between 2014 and 2019 represents <1% of the estimated number of breeding pairs of cormorants in the Atlantic and Interior at over 85,510 and 256,212 nesting pairs, respectively (Tyson et al., 1999).

Table 2 – Double-crested cormorants addressed in New Jersey by WS from FY 2014 to FY 2019.

FY Year	Dispersed	Removal under Depredation Permits	
		Lethal Removal	Nest Destruction
2014	11	1	0
2015	1	1	0
2016	0	2	20
2017	4	0	20
2018	1	0	64
2019	1	1	70

Direct, Indirect, and Cumulative Effects:

As the number of requests for assistance increases, the number of cormorants that will be addressed by WS to alleviate damage or threats is also likely to increase. Based on the best scientific data, the number of requests received by WS for assistance with managing damage and threats associated with cormorants and in anticipation of additional requests for assistance, WS proposed removal level of 200 birds and 300 nests will have no adverse direct effects on cormorant populations. The potential authorized removal from all non-WS entities combined with WS proposed removal is also not expected to create adverse cumulative impacts. All removal of cormorants would occur within the levels permitted by the USFWS pursuant to the MBTA.

The removal and destruction of nests should have little adverse impact on the population. Although this method may reduce the fecundity of individual birds, nest destruction has no long term effect. The destruction of double-crested cormorant nests annually by WS would occur in localized areas where

nesting takes place and would not reach a level where adverse effects on cormorant populations would occur. As with the lethal take of adults, the removal and destruction of nests must be authorized by the USFWS. Therefore, the number of nests taken by WS annually would occur at the discretion of the USFWS.

The USFWS EA (USFWS, 2017b) included a potential biological removal (PBR) model used to estimate the impact of take on the double-crested cormorant population. Results from the PBR revealed that for the Atlantic Flyway, 26,226 double-crested cormorants could be taken while maintaining a stable population (i.e., allowable take). WS proposed take of double-crested cormorants in New Jersey falls well below both allowable take and the Reduced Take Alternative of 11,634 double-crested cormorants selected by USFWS (USFWS, 2017a, 2017b). As such, the proposed take is below the amount of take that would likely reduce the population growth rate of double-crested cormorants based on the analysis in the PBR modeling analyzed in the EA (USFWS, 2017b). This level of proposed take will have negligible adverse impacts on the Atlantic flyway population of double-crested cormorants or the quality of the human environment. The USFWS will monitor double crested cormorant within and across regions in order to prevent cumulative significant impacts from take of double-crested cormorants in Atlantic flyway and the United States.

Wild Turkey Biology and Population Impacts

BBS Appalachian Mountains, 1966-2015: 7.13%
BBS Appalachian Mountains, 2005-2015: 6.03%
BBS New England/Mid Atlantic Coast, 1966-2015: 17.26%
BBS New England/Mid Atlantic Coast, 2005-2015: 17.68%
BBS Piedmont, 1966-2015: 8.02%
BBS Piedmont, 2005-2015: 9.03%
BBS NJ, 1966-2015: 12.73%
BBS NJ, 2005-2015: 16.10%
NJ Population Estimate: 20,000-23,000
WS proposed method: Chemical immbolization

Wild turkeys found in New Jersey consist of the Eastern wild turkey subspecies that is endemic to the eastern half of the United States (McRoberts, Wallace, & Eaton, 2014). The Eastern wild turkey can be found in 48 states and four Canadian provinces, ranging from southern Canada and New England to northern Florida and west to Texas, Missouri, Iowa, and Minnesota (McRoberts et al., 2014). Wild turkeys inhabit hardwood, mixed, and pine forests foraging on a variety of acorns, fruit, seeds, and insects. Turkeys are considered permanent residents in states where they are present and are considered non-migratory. There are an estimated 6 million to 6.2 million wild turkeys in the United States and Canada (Perrotte).

Today, wild turkeys are considered a fairly common permanent resident of New Jersey (NJDFW, 2020). According to trend data available from the BBS, wild turkeys are showing a statistically significant increasing trend in New Jersey estimated at 16.10% annually since the BBS was initiated in 1966 (Sauer et al., 2017). Statistically significant increasing trends are also apparent in the BBS Appalachian Mountains region estimated at 7.13% annually since 1966 through 2015 and in the BBS Piedmont region estimated at 8.02% annually since 1966 through 2015. Populations of turkeys in New Jersey are sufficient to allow for annual hunting seasons. The statewide population is estimated between 20,000 and 23,000 birds with an annual hunting harvest of approximately 3,000 turkeys (NJDFW, 2020). The numbers of turkeys harvested from 2015 through 2019 during the annual turkey hunting seasons are shown in Figure 1. Since 2014, the highest number of turkeys harvested during the hunting seasons occurred in 2015 when 3,164 turkeys were harvested.

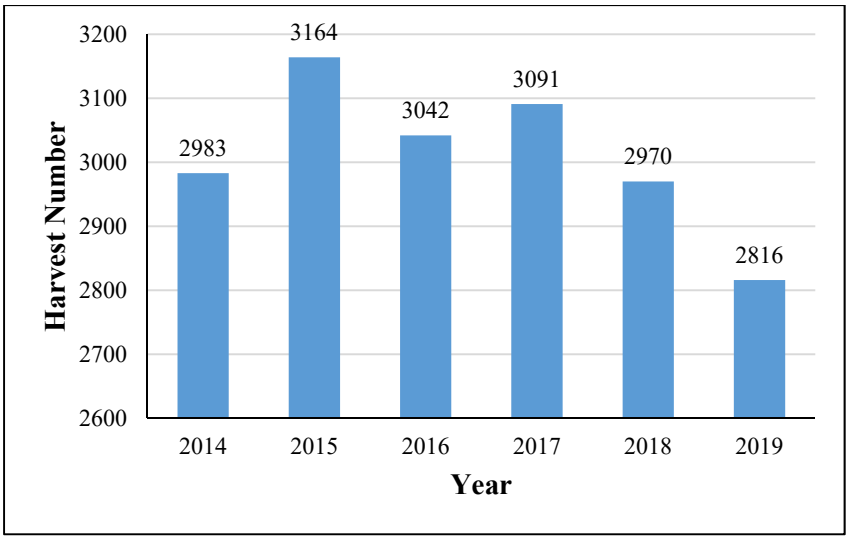

Figure 1 – Number of wild turkeys harvested in New Jersey by calendar year from 2014 through 2019.

Prior to the initiation of the CSA between WS and NJDFW, requests for assistance of wild turkeys received by WS in New Jersey to manage damage or threats of damage were generally referred to NJDFW because wild turkeys are considered non-migratory game birds. Under this CSA, WS is now able to address technical assistance calls and direct control activities for wild turkeys. The number of wild turkeys dispersed, lethally removed, or relocated by WS and the total number removed by all non-WS entities from 2014 to 2018 to alleviate damage and threats associated with these birds are shown in Table 3. Since 2014, WS has used nonlethal methods to disperse 301 wild turkeys and relocate 11 wild turkeys. In addition to removal by WS, NJDFW issued state depredation permits to other entities for the removal of wild turkeys during this period. From 2014 through 2018, a total of 80 wild turkeys, or eight turkeys per year on average were lethally removed to alleviate damage and threats associated with these birds in New Jersey. WS has lethally removed 34 birds.

Requests for assistance with wild turkeys primarily originate at civil and military airports in New Jersey to alleviate strike risks to aircraft. However since June 2018, WS has received increased requests for assistance to manage damage and threats associated with wild turkeys in residential areas. Chemical immobilization is one of the most reliable alternatives to capturing and physically restraining wildlife and other problematic animals (Sontakke, Umapathy, Kumar, & Singh, 2017). In residential areas, it can be used selectively to target aggressive individuals within a group, where other methods are not safe, effective, and humane.

Table 3 – Wild turkeys addressed in New Jersey by calendar year from 2014 through 2018.

Calendar Year	Dispersed by WS	Removal under Depredation Permits		
		Lethal Removal by WS	Lethal Removal by Non-WS Entities	WS Relocation
2014	41	8	12	0
2015	36	6	5	10
2016	71	9	2	1
2017	101	2	16	0
2018	52	9	11	0

Direct, Indirect, and Cumulative Effects:

Under the CSA between WS and NJDFW, WS anticipates to continue to receive increased requests for assistance for wild turkeys especially with regards to human health and safety. Wild turkey population trends have increased in New Jersey since 1966. Based on the best scientific data, WS proposed method of using chemical immobilization with ketamine-xylazine for capture and euthanasia will have no adverse direct or indirect effects on wild turkey populations. When using immobilizing drugs, WS would adhere to all established withdrawal times agreed upon by WS, the NJDFW, and veterinarian authorities. Thus, relocation of birds captured with this method will only occur during a period of time where there is no potential overlap with the start of a harvest season for wild turkeys. Any birds immobilized during a harvest or during a period of time where the withdrawal period could overlap with a harvest season, would be euthanized. This would eliminate risks to human health and safety from persons consuming animals that had or potentially had immobilizing drugs remaining in their systems. Any birds WS captured and euthanized with chemical immobilization will be incinerated or buried to prevent chemical immobilization drugs from getting into wildlife systems. Provided that the 2014 EA previously analyzed WS lethal removal of up to 100 wild turkeys annually and WS has not exceeded this proposed annual removal level, WS does not anticipate any significant cumulative impacts to wild turkeys by using chemical immobilization.

Mute Swan Biology and Population Impacts

BBS Appalachian Mountains, 1966-2015: 7.03%
BBS Appalachian Mountains, 2005-2015: 13.34%
BBS New England/Mid Atlantic Coast, 1966-2015: -0.04%
BBS New England/Mid Atlantic Coast, 2005-2015: 0.44%
BBS NJ, 1966-2015: -1.80%
BBS NJ, 2005-2015: 2.36%
WS proposed method: ketamine-xylazine for chemical immobilization

Mute swans are native to parts of Europe and Asia and are thought to have been introduced into the United States by private individuals in New York prior to 1900. Today, mute swan populations have expanded to include much of the northeastern United States, the Upper Great Lakes region, and the Pacific Northwest from natural dispersal and accidental release of captive birds. Mute swan populations have shown an increasing trend across the United States from 1966 through 2015 estimated at 1.79% annually and from 2005 to 2015 at 4.41% annually(Sauer et al., 2017).

In New Jersey, the population has been monitored since 1986 through Mid-Summer Mute Swan Survey (MSMSS) conducted every three years. As of 2017, 824 mute swans were surveyed during the MSMSS (T. Nichols, personal communication, January 10, 2020). Similarly, the CBC conducted annually recorded 959 mute swans in 2017. Overall, the number of mute swans observed in New Jersey during the CBC has shown a steady increasing trend since 1966 (NAS, 2010). Trend data in the BBS in the state have shown an increasing trend in the mute swan population estimated at 2.36% annually (Sauer et al., 2017). The management objective for mute swans in New Jersey is a statewide population of 500 swans (Atlantic Flyway Council, 2015). Mute swans are considered a non-native species under the MBTA, as amended by the Migratory Bird Treaty Reform Act of 2004. Therefore, mute swans are afforded no protection under the Act. A hunting season has not been established for mute swans, and a permit from NJDFW is required to lethally remove swans.

Since the initiation of the CSA between WS and NJDFW in June 2018, WS has been able to address in increased requests for technical assistance and direct control activities for mute swans. The number of mute swans dispersed and lethally removed as well as the number of nests removed and destroyed by WS from FY 2014 to FY 2019 to alleviate damage and threats associated with these birds are shown in Table 4. In FY 2014, WS has used nonlethal methods to disperse 1,213 mute swans. Between FY 2014 and FY

2019, 113 mute swans or 19 mute swans per year on average were lethally removed by WS. A total of 47 nests were removed and destroyed to alleviate damage and threats associated with these birds in New Jersey. However since June 2018, WS has received increased requests for assistance to manage damage and threats associated with mute swans in residential areas where individuals pose a human safety concern. WS anticipates using chemical immobilization as a capture method as increased requests to manage aggressive swans. Chemical immobilization is one of the most reliable alternatives to capturing and physically restraining wildlife and other problematic animals (Sontakke et al., 2017). In residential areas, it can be used selectively to target aggressive individuals within a group, where other methods are not safe, effective, and humane.

Table 4 – Mute swans addressed in New Jersey by WS from FY 2014 to FY 2019.

FY Year	Dispersed	Removal under Depredation Permits	
		Lethal Removal	Nest Destruction
2014	15	10	12
2015	9	3	13
2016	117	3	7
2017	447	64	5
2018	269	29	5
2019	356	4	5

Direct, Indirect, and Cumulative Effects:

Under the CSA between WS and NJDFW, WS anticipates to continue to receive increased requests for assistance for mute swans especially with regards to human health and safety. Mute swan population trends have increased in New Jersey since 2005. Based on the best scientific data, WS proposed method of using chemical immobilization with ketamine-xylazine for capture will have no adverse direct or indirect effects on mute swan populations. Any birds WS captures with chemical immobilization will be humanely euthanized and incinerated or buried to prevent chemical immobilization drugs from getting into wildlife systems. Provided that the 2014 EA previously analyzed WS lethal removal of up to 500 mute swans annually and WS has not exceeded this proposed annual removal level, WS does not anticipate any significant cumulative impacts to mute swans by using chemical immobilization.

American Kestrel Biology and Population Impacts

BBS Appalachian Mountains, 1966-2015: -0.66%
BBS Appalachian Mountains, 2005-2015: -0.07%
BBS New England/Mid Atlantic Coast, 1966-2015: -5.30%
BBS New England/Mid Atlantic Coast, 2005-2015: -4.12%
BBS Piedmont, 1966-2015: -2.67%
BBS Piedmont, 2005-2015: -1.84%
BBS NJ, 1966-2015: -5.42%
BBS NJ, 2005-2015: -4.94%
NJ population estimate: 410
WS proposed translocation: 400

American kestrels are the smallest and most common North American falcon. Their range includes most of North America, except the far northern portions of Alaska and Canada (Smallwood & Bird, 2002). Kestrels are capable of breeding as yearlings as is the case in about 80% of individuals. Average clutch size is most often four to five eggs, with an estimated 67% reproductive success (at least one fledgling) across their range (Smallwood & Bird, 2002).

Kestrels can be found throughout the year in New Jersey. They are considered to be an uncommon summer resident with a fairly widespread distribution (Korth, 2016). Kestrels are considered fairly

common during the spring migration periods and are a common migrant through the fall where they are more concentrated along the coast (Korth, 2016).

Although widespread, the northeastern kestrel population is declining and in New Jersey, American kestrels are listed as "threatened." Since 1966, the number of kestrels observed along routes surveyed during the BBS in the state has shown a statistically significant declining trend estimated at -5.42% annually, with a -4.94% annual decline occurring from 2005 through 2015 (Sauer et al., 2017). Similar trends have been observed in the New England/Mid-Atlantic Coast region estimated at -5.3% annually from 1966 through 2015 and -4.12% annually from 2005 through 2015 (Sauer et al., 2017). Based on BBS data, the estimated state population is at 410 kestrels. The number of kestrels observed in areas surveyed during the CBC has also shown a declining trend since 1966 (NAS, 2010). Walsh et al. (1999) speculated that the disappearance of open areas used by kestrels for hunting prey through reforestation or the loss of farmland to urban development may be partly responsible for the decline. Kestrels are also secondary cavity nesters that use existing natural or man-made cavities. As trees are removed for development, nesting cavities are also lost (Korth, 2016).

Most requests for assistance received by WS associated with kestrels occur at civil and military airports where those individuals are posing threats to aviation safety. WS has addressed those requests for assistance primarily with nonlethal dispersal methods and through live-capture and translocation of individual kestrels. Since FY 2014, WS has used nonlethal methods to disperse 559 kestrels and translocate 588 kestrels (Table 5). In FY 2015, the number of American kestrels WS dispersed from civil airports and military installations in New Jersey increased from four birds in FY 2014 to 244 birds in FY 2016 and 202 birds in FY 2017. The 2014 EA determined that 100 American kestrels could be translocated, however, due to the increase in kestrel activity since FY 2018, WS has exceeded the amount previously analyzed. In 2018, WS completed a Categorical Exclusion that would allow WS to address the increased American kestrel activity in airport environments (USDA, 2017). The sharpest increase was observed in FY 2019 when WS translocated 249 American kestrels to address damage or threats of damage to aviation safety. Most of the kestrel translocations occurred during the migratory periods in New Jersey.

Table 5 – Number of American kestrels dispersed and translocated by WS in New Jersey from FY 2014 to FY 2019.

FY Year	Dispersed by WS	Removal under Depredation Permits		
		Lethal Removal	Translocated	Transfer of Custody
2014	4	0	4	0
2015	93	1	43	0
2016	44	0	30	0
2017	202	0	96	1
2018	125	0	166	1
2019	91	0	249	2

Direct, Indirect, and Cumulative Effects:

As the number of requests for assistance increases, the number of American kestrels that will be addressed by WS to alleviate damage or threats is also likely to increase especially with regards to aircraft safety. Even though American kestrels have shown a slightly decreasing trend in New Jersey since 1966, WS proposed increased translocation would not reach a magnitude that would cause adverse effects to American kestrels when released into appropriate habitat. Although the live-capture and translocation of this species would be a nonlethal method of reducing damage or threats of damage, kestrels could be

translocated during their nesting season, which could lower nesting success. Reduced nesting success could occur by removing one of the adult pairs. Provided most of the translocations of American kestrels in New Jersey have been carried out outside of the nesting season, significant adverse indirect effects from translocation are not expected to occur. American kestrels captured and translocated could be banded for identification purposes using United States and are not likely affecting breeding kestrels. The translocation of American kestrels can only occur when permitted by the USFWS pursuant to the MBTA and authorized by the NJDFW permit's section and ENSP with regards to their "threatened" status. Therefore, all live-capture and translocation by WS is authorized and occurs at the discretion of USFWS and NJDFW, which ensures cumulative take is considered as part of population management objectives for American kestrels.

Sharp-shinned Hawk Biology and Population Impacts

BBS Appalachian Mountains, 1966-2015: 1.51%
BBS Appalachian Mountains, 2005-2015: 1.94%
BBS New England/Mid Atlantic Coast, 1966-2015: 0.98%
BBS New England/Mid Atlantic Coast, 2005-2015: 2.61%
BBS Piedmont, 1966-2015: 0.30%
BBS Piedmont, 2005-2015: 0.78%
BBS NJ, 1966-2015: 0.75%
BBS NJ, 2005-2015: 1.4%
NJ population estimate: 150
WS proposed removal: 20 nests and all eggs
WS proposed relocation: 20

Sharp-shinned hawks are small, forest-dwelling raptors that primarily feed on small birds (10-30 g) associated with forest canopies (Reynolds, Meslow, & Wight, 1982). They are widely dispersed, but few studies of sharp-shinned hawk nesting habitat have been conducted in eastern North America (Coleman, Bird, & Jacobs, 2002) because they nest in dense vegetation that makes it difficult to locate and study their nests during the breeding season (Bildstein & Meyer, 2000). Most of the breeding population of sharp-shinned hawks in New Jersey are located in the northwest portion of the state (BCR 28 and 29), but few nest in southern New Jersey (Heiser, 2011). The breeding population are mostly year round residents in New Jersey nesting in boreal coniferous forests and deciduous woodlands (Heiser, 2011). In the winter, they utilize a wider range of habitats including urban and suburban areas (Heiser, 2011).

In New Jersey, sharp-shinned hawks are considered a "species of special concern." Sharp-shinned hawks are showing a slight increasing trends in New Jersey estimated at 0.75% annually from 1966 through 2015 and 1.4% annually from 2005 through 2015 (Sauer et al., 2017). Similar increasing trends have been observed across the BBS Appalachian Mountains region estimated at 1.51% annually since 1966 through 2015 and 1.94% annually since 2005 through 2015 (Sauer et al., 2017). The BBS Piedmont region also shows a very slight increasing trend since 1966 through 2015 estimated at 0.30% annually. The number of sharp-shinned hawks observed in areas surveyed during the CBC has also shown a very slight increasing trend since 1966 (NAS, 2010). Though sharp-shinned hawks are difficult to census during the breeding season due to their secretive nature (Bildstein & Meyer, 2000; Heiser, 2011), the PFSC (2019) estimates the statewide breeding population to be 150 individuals and the North American population to be 410,000.

Requests for assistance received by WS associated with sharp-shinned hawks occur at civil and military airports where those individuals are posing threats to aviation safety. WS has addressed those requests for assistance with nonlethal dispersal methods. Since FY 2014, WS has used nonlethal methods to disperse 10 sharp-shinned hawks. In FY 2016, WS dispersed one sharp-shinned hawk and in FY 2019, WS dispersed nine sharp-shinned hawks. In FY 2017, one sharp-shinned hawk was lethally removed.

Direct, Indirect, and Cumulative Effects:

Especially with increased observations of sharp-shinned hawks in FY 2019, WS anticipates increased requests for assistance for them with regards to aircraft safety. Sharp-shinned hawk population trends have slightly increased in New Jersey since 1966. Based on the best scientific data, WS proposed removal and destruction of 20 nests and all eggs will have no adverse direct effects on sharp-shinned hawk populations. The removal and destruction of nests must be authorized by the UFWS and NJDFW. Therefore, the number of nests removed by WS annually would occur at the discretion of the USFWS and NJDFW.

In addition, WS limited translocation that could occur to alleviate the threat of collision to aircraft would not reach a magnitude that would cause adverse effects to sharp-shinned hawks when released into appropriate habitat. Although the live-capture and translocation of this species would be a nonlethal method of reducing damage or threats of damage, sharp-shinned hawks could be translocated during their nesting season, which could lower nesting success. Reduced nesting success could occur by removing one of the adult pairs. Provided most WS' translocations will occur outside of the nesting season, significant adverse indirect effects from translocation are not expected to occur. Sharp-shinned hawks captured and translocated could be banded for identification purposes using United States and are not likely affecting breeding sharp-shinned hawks. As with the destruction and removal of sharp-shinned hawk nests, translocation of sharp-shinned hawks can only occur when permitted by the USFWS pursuant to the MBTA and authorized by the NJDFW which ensures cumulative take is considered as part of population management objectives for sharp-shinned hawks.

Cooper's Hawk Biology and Population Impacts

BBS Appalachian Mountains, 1966-2015: 3.37%
BBS Appalachian Mountains, 2005-2015: 4.08%
BBS New England/Mid Atlantic Coast, 1966-2015: 8.33%
BBS New England/Mid Atlantic Coast, 2005-2015: 8.72%
BBS Piedmont, 1966-2015: 4.97%
BBS Piedmont, 2005-2015: 4.70%
BBS NJ, 1966-2015: 7.64%
BBS NJ, 2005-2015: 8.63%
NJ population estimate: 4,400
WS proposed removal: 20 nests and all eggs
WS proposed translocation: 20

The Cooper's hawk is one of the three species of accipiters in North America (Davenport, 2012). The Cooper's hawk breeds in southern Canada, the contiguous United States, and northern Mexico (Davenport, 2012). Its wintering grounds occur throughout the United States, Mexico, and south into Central America (Davenport, 2012). In New Jersey, Cooper's hawks can be found year-round (Davenport, 2012). They generally inhabit forested areas, but will use open areas with wooded vegetation interspersed or adjacent to old fields, pastures, or marshlands. However, Cooper's hawks are also tolerant of human disturbance and fragmentation (Rosenfield, Madden, Bielefeldt, & Curtis, 2019). Their populations have been increasing in suburban and urban areas in recent years (Rosenfield et al., 2019). The diet of the Cooper's hawk consists primarily of medium sized birds, but also includes a wide variety of small mammals and occasionally insects (Rosenfield et al., 2019). The open habitat and abundant prey items such as European starlings (*Sturnus vulgaris*) available at airports and in urban areas makes them attractive locations for Cooper's hawks.

The Cooper's hawk was listed as "endangered" in New Jersey in 1974, but populations began to recover after the ban of DDT in 1972 and many areas became reforested through natural succession. By 1999, the status was reclassified to "threatened." As of 2012, following surveys showing a substantial increase in the population of Cooper's hawks, only the breeding population is listed as a "species of special concern" (Davenport, 2012). In New Jersey, the number of Cooper's hawks observed in New Jersey surveyed during the BBS has shown an increasing trend estimated at 7.64% annually since 1966 through 2015 and

8.63% annually from 2005 through 2015 (Sauer et al., 2017). A similar trend has been observed for the number of Cooper's hawks observed in the BBS New England/Mid-Atlantic coast region where the population has increased at an estimated 8.33% annually since 1966 through 2015, and an estimated 8.72% since 2005 through 2015 (Sauer et al., 2017). The number of Cooper's hawks observed in New Jersey during the CBC has also shown an increasing trend since 1966 (NAS, 2010). Using data from the BBS, the PFSC (2019) estimated the statewide breeding population of Cooper's hawks to be 4,400 birds and the North American population to be 840,000.

Most requests for assistance received by WS associated with Cooper's hawks occur at civil and military airports where those individuals are posing threats to aviation safety. WS has addressed those requests for assistance with nonlethal dispersal methods and through live-capture and translocation of individual hawks. Since FY 2014, WS has used nonlethal methods to disperse 22 Cooper's hawks and translocate 10 Cooper's hawks (Table 6).

Table 6 – Number of Cooper's hawks dispersed and translocated by WS in New Jersey from FY 2014 to FY 2019.

FY Year	Dispersed	Translocated
2014	2	0
2015	3	0
2016	2	0
2017	2	0
2018	7	5
2019	6	5

Direct, Indirect, and Cumulative Effects:

As the number of requests for assistance increases, the number of Cooper's hawks that will be addressed by WS to alleviate damage or threats is also likely to increase especially with regards to aircraft safety. Cooper's hawk population trends have steadily increased in New Jersey since 1966. Based on the best scientific data, WS proposed removal and destruction of 20 nests and all eggs will have no adverse direct effects on Cooper's hawk populations. The removal and destruction of nests must be authorized by the UFWS and NJDFW. Therefore, the number of nests removed by WS annually would occur at the discretion of the USFWS and NJDFW.

In addition, WS limited translocation that could occur to alleviate the threat of collision to aircraft would not reach a magnitude that would cause adverse effects to Cooper's hawks when released into appropriate habitat. Although the live-capture and translocation of this species would be a nonlethal method of reducing damage or threats of damage, Cooper's hawks could be translocated during their nesting season, which could lower nesting success. Reduced nesting success could occur by removing one of the adult pairs. Provided most WS' translocations will occur outside of the nesting season, significant adverse indirect effects from translocation are not expected to occur. Cooper's hawks captured and translocated could be banded for identification purposes using United States and are not likely affecting breeding Cooper's hawks. As with the destruction and removal of Cooper's hawk nests, translocation of Cooper's hawks can only occur when permitted by the USFWS pursuant to the MBTA and authorized by the NJDFW which ensures cumulative take is considered as part of population management objectives for Cooper's hawks.

Great Horned Owl Biology and Population Impacts

BBS Appalachian Mountains, 1966-2015: 0.01%
BBS Appalachian Mountains, 2005-2015: 1.18%
BBS New England/Mid Atlantic Coast, 1966-2015: 0.17%
BBS New England/Mid Atlantic Coast, 2005-2015: 0.21%
BBS Piedmont, 1966-2015: -0.83%
BBS Piedmont, 2005-2015: 0.12%
BBS NJ, 1966-2015: 0.92%
BBS NJ, 2005-2015: 1.33%
NJ population estimate: 1,500
WS proposed removal: 5
WS proposed relocation: 20

The great horned owl has the widest geographic range of owls in North America (Artuso et al., 2013). The great horned owl is a large owl, easily distinguished by its size, ear tufts, white chest, and yellow eyes (Houston et al., 1998). These owls do not have an annual migration and can be found throughout North America (Houston et al., 1998), including New Jersey, year round. Great horned owls can be found in a wide variety of habitats including forest, open habitat, and deserts (Houston et al., 1998). In studies carried out in New Jersey, great horned owls were found to be habitat generalists that were more tolerant of forest fragmentation from suburban development and disturbance than other sympatric forest raptors (Bosakowski & Smith, 1997; Smith, Bosakowski, & Devine, 1999). Nests are constructed in trees and tree cavities, on cliffs, buildings, artificial platforms, and on the ground (Houston et al., 1998). A generalist and opportunistic feeder, the diet of the great horned owl includes small rodents, rabbits, waterfowl, amphibians, reptiles, and insects (Houston et al., 1998). In a study of Pennsylvania great horned owls, more than 30% of diet consisted of opossums (*Didelphis marsupilis*), testament to this owl's generalistic and opportunistic nature (Wink, Senner, & Goodrich, 1987).

In New Jersey, the number of great horned owls observed during the BBS has shown a slight increasing trend estimated at 0.92% annually since 1996 through 2015 and 1.33% annually since 2005 through 2015 (Sauer et al., 2017). The number of great horned owls observed in the BBS New England/Mid Atlantic Coast region also shows a similar slight trend estimated at 0.17% annually since 1966 through 2015 and 0.21% annually since 2005 through 2015 (Sauer et al., 2017). However in the eastern BBS region, the population has a statistically significant decline at an estimated -2.74% annually since 1966 through 2015 and -1.32% annually since 2005 through 2015 (Sauer et al., 2017). Since 1966, the number of great horned owls observed during the CBC has also shown a stable trend in New Jersey (NAS, 2010). Using data from the BBS, the PFSC (2019) estimated the statewide breeding population of great horned owls to be 1,500 birds.

Since FY 2014, WS has dispersed one great horned owl (FY 2016) to alleviate strike risks with aircraft. However, WS anticipates increased requests for assistance from existing and new cooperators to manage great horned owls at civil and military airports in New Jersey as well as managing owls outside of airport environments.

Direct, Indirect, and Cumulative Effects:

As the number of requests for assistance increases, the number of great horned owls that will be addressed by WS to alleviate damage or threats is also likely to increase. Great horned owl trends have slightly increased in New Jersey since 1966. Based on the best scientific data, WS proposed removal of great horned owls will have no adverse direct effects on great horned owl populations. WS' proposed annual removal represents <1% of the state population estimate. The removal of great horned owls can only occur when authorized through the issuance of depredation permits by the USFWS pursuant to the MBTA and NJDFW.

In addition, WS limited translocation that could occur to alleviate the threat of collision to aircraft would not reach a magnitude that would cause adverse effects to great horned owls when released into

appropriate habitat. Although the live-capture and translocation of this species would be a nonlethal method of reducing damage or threats of damage, great horned owls could be translocated during their nesting season, which could lower nesting success. Reduced nesting success could occur by removing one of the adult pairs. Provided most WS' translocations will occur outside of the nesting season, significant adverse indirect effects from translocation are not expected to occur. Great horned owls captured and translocated could be banded for identification purposes using United States and are not likely affecting breeding great horned owls. As with the removal of great horned owls, translocation of great horned owls can only occur when permitted by the USFWS pursuant to the MBTA and authorized by the NJDFW which ensures cumulative take is considered as part of population management objectives for great horned owls.

Osprey Biology and Population Impacts

BBS Appalachian Mountains, 1966-2015: 9.17%
BBS Appalachian Mountains, 2005-2015: 11.50%
BBS New England/Mid Atlantic Coast, 1966-2015: 7.46%
BBS New England/Mid Atlantic Coast, 2005-2015: 8.46%
BBS Piedmont, 1966-2015: 10.61%
BBS Piedmont, 2005-2015: 14.61%
BBS NJ, 1966-2015: 7.16%
BBS NJ, 2005-2015: 7.90%
NJ population estimate: 3,700
WS proposed removal: 10 nests and all eggs
WS proposed relocation: 10 nests and all eggs

Ospreys are large raptors most often associated with shallow aquatic habitats where they feed primarily on fish (Bierregaard, Poole, Martell, Pyle, & Pattern, 2016). Historically, osprey constructed nests on tall trees and rocky cliffs. Today, ospreys are most commonly found nesting on man-made structures, such as power poles, cell towers, and man-made nesting platforms (Bierregaard et al., 2016). The breeding range for the osprey stretches from Alaska to Newfoundland, Canada and all but the southernmost population is migratory, leaving after the breeding season to winter in Central and South America (Bierregaard et al., 2016).

Along routes surveyed in the New England/Mid-Atlantic Coast region during the BBS, the number of osprey observed since 1966 through 2015 has shown an increasing trend estimated at 7.46% annually, which is statistically significant, with a 8.46% annual increase occurring from 2005 through 2015 (Sauer et al., 2017). The PFSC (2019) estimated the statewide population of osprey at 3,700 birds. Based on BBS data, NJDFW estimated that there was over 500 nesting pairs when the EA was prepared in 2014. In 2019, NJDFW recorded 669 occupied nests with 542 nests located along the Atlantic Coast and 97 nests located along the Delaware Bay (Wurst & Clark, 2020). In 2019, productivity across all nests average 1.91 young/active nest, which is slightly higher than productivity recorded in 2016 through 2018 (Wurst & Clark, 2020). Ospreys are listed as "threatened" by NJDFW based on the status of breeding population in New Jersey.

With their recent reproductive success in New Jersey, conflicts between ospreys and the communication, utility, and transportation (e.g., aviation) industries have increased. These conflicts vary in scale ranging from minor to major problems (Washburn, 2014) . In a smaller scaled problem, such as when short term maintenance is needed on a communications tower, it may not be necessary to remove or relocate the osprey nest and eggs or nestlings. In coordination and with approval by NJDFW, WS could be present onsite to monitor ospreys and their nest while the repairs are being completed. Alternatively with NJDFW approval, WS may also take temporary possession of osprey eggs or nestlings until repairs are completed and then return the osprey eggs or nestlings to the nest on the same day. Osprey nest materials interfere with the function of the transmitting and receiving equipment. Major problems, such as ospreys nesting near civil and military airport (Washburn, 2014), nests will need to be removed to alleviate impacts to aircraft safety. Nest removal and relocations are determined based upon the scope and scale of the problem with approval by NJDFW

The number of ospreys dispersed and nests removed and destroyed by WS from FY 2014 to FY 2019 to alleviate damage and threats associated with these birds are shown in Table 7. Since FY 2014, WS has used nonlethal methods to disperse 27 ospreys at civil and military airports. WS has also removed a total of eight osprey nests since FY 2014. The 2014 EA previously determined that up to five osprey nests could be removed. Though the annual number of nest removals determined has not been exceeded, WS anticipates increased requests for assistance with regards to osprey nesting behavior especially as the breeding population increases in New Jersey.

Table 7 – Ospreys addressed by WS in New Jersey from FY 2014 to FY 2019.

FY Year	Dispersed	Nest Destruction
2014	1	0
2015	9	3
2016	5	2
2017	3	0
2018	4	2
2019	5	1

Direct, Indirect, and Cumulative Effects:

The osprey population trend in New Jersey has been increasing since 1966. Based on the best scientific data, WS proposed removal of up to 10 osprey nests and proposed relocation of up to 10 nests of osprey nests to alleviate damage or threats of damage would not be expected to affect the population of ospreys adversely. Although this method may reduce the fecundity of individual birds, nest destruction has no long term effect. Osprey nest removal and nest relocation must be permitted under USFWS depredation permits pursuant to the MBTA that are approved and co-signed by NJDFW. Therefore, the number of nests removed or relocated by WS annually would occur at the discretion of the USFWS and NJDFW which ensure cumulative take is considered as part of population management objectives for ospreys in New Jersey.

Summary

Evaluation of WS' activities relative to wildlife populations indicated that program activities will likely have no cumulative adverse effects on populations in New Jersey. WS' actions would be occurring simultaneously, over time, with other natural processes and human-generated changes that are currently taking place. Those activities include, but are not limited to:

- Natural mortality of wildlife
- Human-induced mortality through private damage management activities
- Human and naturally induced alterations of wildlife habitat
- Annual and perennial cycles in population densities

All those factors play a role in the dynamics of wildlife populations. In many circumstances, requests for assistance arise when some or all of those elements have contrived to elevate target species populations or place target species at a juncture to cause damage to resources. WS' actions to minimize or eliminate damage are constrained as to scope, duration and intensity, for the purpose of minimizing or avoiding impacts to the environment. WS evaluates damage occurring, including other affected elements and the dynamics of the damaging species; determines appropriate strategies to minimize effects on environmental elements; applies damage management actions; and subsequently monitors and

adjusts/ceases damage management actions (Slate, Owens, Connolly, & Simmons, 1992). This process allows WS to take into consideration other influences in the environment, such as those listed above, in order to avoid cumulative adverse impacts on target species.

Issue 2 – Effects on Nontarget Wildlife Species Populations, Including T&E Species

The issue of nontarget species effects, including effects on threatened and endangered (T&E) species, arises from the use of nonlethal and lethal methods identified in the alternatives. The use of nonlethal and lethal methods has the potential to inadvertently disperse, capture, or kill nontarget wildlife. WS' SOPs are designed to reduce the effects of damage management activities on nontarget species' populations which were discussed in the EA. To reduce the risks of adverse effects to nontarget wildlife, WS selects damage management methods that are as target-selective as possible or applies such methods in ways that reduces the likelihood of capturing nontarget species. Before initiating management activities, WS also selects locations which are extensively used by the target species and employs baits or lures which are preferred by those species. Despite WS' best efforts to minimize nontarget take during program activities, the potential for adverse effects to nontargets exists when applying both nonlethal and lethal methods to manage damage or reduce threats to safety.

Nonlethal methods have the potential to cause adverse effects on nontargets primarily through exclusion, harassment, and dispersal. Any exclusionary device erected to prevent access of target species also potentially excludes species that are not the primary reason the exclusion was erected. Therefore, nontarget species excluded from areas may potentially be adversely impacted if the area excluded is large enough. The use of auditory and visual dispersal methods used to reduce damage or threats caused by target species are also likely to disperse nontargets in the immediate area where the methods are employed. However, the potential impacts on nontarget species are expected to be temporary with target and nontarget species often returning after the cessation of dispersal methods.

While every precaution is taken to safeguard against taking nontargets during operational use of methods and techniques for resolving damage and reducing threats caused by wildlife, the use of such methods can result in the incidental take of unintended species. Those occurrences are minimal and should not affect the overall populations of any species. WS has not captured, released or lethally removed any nontarget birds during bird damage management activities since the Decision and FONSI was signed for the EA.

The EA concluded that effects of control methods on nontarget species is biologically insignificant to nonexistent and that WS has not adversely affected the viability of any wildlife species populations through bird damage management activities. Bird damage management activities implemented by WS utilize the most selective and appropriate methods for taking targeted bird species and excluding nontarget species. The lethal removal of nontargets from using those methods described in the EA is likely to remain low with removal never reaching a magnitude that a negative impact on populations would occur.

WS' program activities in New Jersey to manage damage and threats caused by birds have changed from those described in the EA with the proposed addition of chemical immobilization with ketamine-xylazine for mute swans and wild turkeys. However, this proposed additional method and WS' bird damage management activities discussed in the EA will continue to have no adverse effects on nontarget species. The use of chemical immobilization is selective for target species since the identification of an individual is made prior to the application of the method. Drug delivery will be administered through injection using a dart gun. WS personnel will also be on-site to continue to do close monitoring of the immobilized animal and control potential nontarget exposure. Thus, the use of chemical immobilization will not affect nontarget species.

Threatened and Endangered Species

A review of T&E species listed by the USFWS (Appendix A) showed that the listing of the red knot (*Calidris canufus rufa*) and northern long-eared bat (*Myotis septentrionalis*) has occurred since the completion of the EA in 2014. Based on a review of the best scientific data available, WS has determined that activities conducted pursuant to the proposed action would have "No Effect" on these two newly listed species or their critical habitats. WS has not historically conducted operations in red knot or northern long-eared bat habitat. WS does not anticipate performing operations in these habitats in the future. While WS may make recommendations for habitat modifications, the program does not typically perform these functions.

Issue 3 – Effects of Damage Management Methods on Human Health and Safety

Since the completion of the EA and the Decision and FONSI in 2014, no injuries to employees or the public occurred from the implementation of methods under the proposed action. Based on the analyses in the EA, when WS' activities are conducted according to WS' directives, SOPs, and in accordance with federal, state, and local laws those activities pose minimal risks to human safety.

The impacts of the program on human health and safety are expected to remain insignificant even with the proposed addition of chemical immobilization with ketamine-xylazine as a capture method for mute swans and wild turkeys. The use of pharmaceutical drugs, including those used in wildlife capture and handling, are administrated by the United States Food Drug Administration and United States Drug Enforcement Administration. To reduce risks to persons employing this method, WS-New Jersey will work in teams of two. Additionally, WS personnel that possess or use these drugs or substances would be trained and certified in accordance with WS Directive 2.430. WS personnel that use these drugs or substances would be required to wear appropriate PPE they are provided with (WS Directive 2.601). WS' use of immobilization and euthanasia conducted by WS would also be done in accordance with WS Directive 2.505. Methods are also discussed in more detail below.

> **Ketamine Hydrochloride** is a dissociative anesthetic that is used to capture wildlife, primarily mammals, birds, and reptiles. It is used to eliminate pain, calm fear and allay anxiety. Ketamine is possibly the most versatile drug for chemical capture, and it has a wide safety margin (Fowler & Miller, 1999). When used alone, this drug may produce muscle tension, resulting in shaking, staring, increased body heat, and, on occasion, seizures. For this reason, ketamine is combined with other drugs such as xylazine. The combination of such drugs is used to control an animal, maximize the reduction of stress and pain, and increase human and animal safety.
>
> **Xylazine** is a sedative (analgesic) that calms nervousness, irritability, and excitement, usually by depressing the central nervous system. It can also be used alone to facilitate physical restraint. However, because xylazine is not an anesthetic, sedated animals are usually responsive to stimuli. Therefore, personnel should be even more attentive to minimizing sight, sound, and touch. Xylazine is commonly used with other drugs such as ketamine to produce relaxed anesthesia. The combination of these drugs suppresses undesirable side effects (e.g., the muscle tension commonly associated with Ketamine).

To reduce risks to people coming in contact with this method, WS-New Jersey personnel will either retrieve the sedated bird or will remain with the immobilized wildlife until it has fully recovered. Chemical immobilization with ketamine-xylazine will only be used on private or public property sites with authorization from the property owner or manager. When using immobilizing drugs, WS would adhere to all established withdrawal times agreed upon by WS, the NJDFW, and veterinarian authorities. If WS receives a request to immobilize wild turkeys during a period of time when the regulated harvest of

wild turkeys was occurring or during period of time where the withdrawal period could overlap with a harvest season, WS would euthanize the wild turkey. This would eliminate risks to human health and safety from persons consuming animals that had or potentially had immobilizing drugs remaining in their systems.

Issue 4 – Effects on the Aesthetic Values of Birds

As described in the EA, WS employs methods when requested that would result in the dispersal, exclusion, or removal of individuals or small groups of birds to resolve damage to agriculture, property, natural resources, or threats to human health and safety. In some instances where birds are excluded, dispersed, or removed, the ability of interested persons to observe and enjoy those birds will likely temporarily decline. Even the use of nonlethal methods can lead to dispersal of birds if the resource being protected was acting as an attractant. Thus, once the attractant has been removed or made unattractive, birds will likely disperse to other areas where resources are more available.

The use of lethal methods would result in a temporary reduction in local populations resulting from the removal of target birds to resolve requests for assistance. WS' goal is to respond to requests for assistance and to manage those birds responsible for the resulting damage. Therefore, the ability to view and enjoy those birds will still remain if a reasonable effort is made to view those species outside the area in which damage management activities occurred.

The EA concluded the effects on aesthetics would be variable depending on the stakeholders' values towards wildlife. Program activities and potential impacts on human affectionate bonds with birds and aesthetics have not changed from those analyzed in the EA.

Summary

No significant cumulative environmental impacts are expected from activities considered under the supplement. Likewise, no significant cumulative impacts have been identified from the implementation of the proposed action in the EA since 2014. Under the proposed action, the reduction of wildlife damage or threats using an integrated approach employing both nonlethal and lethal methods would not have significant impacts on wildlife populations in New Jersey or nationwide. WS continues to coordinate activities with federal, state, and local entities to ensure activities do not adversely impact wildlife populations. No risk to public safety is expected when WS' activities are conducted pursuant to the proposed action or the proposed supplement to the EA. The EA further describes and addresses cumulative impacts from the alternatives, including the proposed action.

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APPENDIX A

USFWS Listing of Threatened and Endangered Species in New Jersey

Summary of Animals – 10 Listings

Scientific Name	Common Name	Where Listed	ESA Listing Status
Clemmys muhlenbergii	bog turtle	Wherever found, except GA, NC, SC, TN, VA	Threatened
Alasmidonta heterodon	Dwarf wedgemussel	Wherever found	Endangered
Eretmochelys imbricata	Hawksbill sea turtle	Wherever found	Endangered
Myotis sodalis	Indiana bat	Wherever found	Endangered
Dermochelys coriacea	Leatherback sea turtle	Wherever found	Endangered
Cicindela dorsalis dorsalis	Northeastern beach tiger beetle	Wherever found	Threatened
Myotis septentrionalis	Northern Long-Eared Bat	Wherever found	Threatened
Charadrius melodus	Piping Plover	[Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered.	Threatened
Calidris canutus rufa	Red knot	Wherever found	Threatened
Sterna dougallii dougallii	Roseate tern	Northeast U.S. nesting population	Endangered

Summary of Plants – 6 Listings

Scientific Name	Common Name	Where Listed	ESA Listing Status
Schwalbea americana	American chaffseed	Wherever found	Endangered

Scientific Name	Common Name	Where Listed	ESA Listing Status
Rhynchospora knieskernii	Knieskern's Beaked-rush	Wherever found	Threatened
Amaranthus pumilus	Seabeach amaranth	Wherever found	Threatened
Aeschynomene virginica	Sensitive joint-vetch	Wherever found	Threatened
Isotria medeoloides	Small whorled pogonia	Wherever found	Threatened
Helonias bullata	Swamp pink	Wherever found	Threatened

- **As of 02/13/2015 the data in this report has been updated to use a different set of information. Results are based on where the species is believed to or known to occur. The FWS feels utilizing this data set is a better representation of species occurrence. Note: there may be other federally listed species that are not currently known or expected to occur in this state but are covered by the ESA wherever they are found; Thus if new surveys detected them in this state they are still covered by the ESA. The FWS is using the best information available on this date to generate this list.**
- This report shows listed species or populations believed to or known to occur in
- This list does not include experimental populations and similarity of appearance listings.
- This list includes species or populations under the sole jurisdiction of the National Marine Fisheries Service.
- Click on the highlighted scientific names below to view a Species Profile.

Obtained from the USFWS website at https://ecos.fws.gov/ecp0/reports/species-listed-by-state-report?stateAbbrev=NJ&stateName=New%20Jersey&statusCategory=Listed&status=listed on April 6, 2020.